

IN THE CLAIMS

Please amend claims 1 thru 25 and 27 thru 30, and add claims 31 thru 33, as follows:

1 1. (Currently Amended) A ~~data structure for implementing a traffic engineering~~
2 ~~function~~ method for setting a label switched path (LSP) in a multiprotocol label switching
3 system implementing a traffic engineering function, comprising:

4 receiving a request for setting the LSP including entry indexes of a previously
5 stored plurality of profiles;

6 interlinking entries of a corresponding profile in accordance with the received
7 entry indexes;

8 setting up the LSP referring to information of linked profiles, wherein the plurality
9 of profiles include a subscriber profile including a plurality of entries for storing
10 forwarding equivalence class (FEC) information required for setup of ~~[[a]]~~ the label
11 switched path (LSP) based on the traffic engineering function, said ~~entries of said~~
12 subscriber ~~profile~~ profiles being sequentially assigned indexes corresponding to a given
13 traffic engineering service subscriber identification (ID);

14 a path profile including a plurality of entries for storing respective items of path
15 information regarding a type length value (TLV) of a signal protocol required for setup of
16 an explicit routed label switched path (ER-LSP) based on the traffic engineering function,
17 said entries of said path profile being sequentially assigned indexes corresponding to the

18 respective items of the path information; and

19 a quality of service (QoS) profile including a plurality of entries for storing
20 respective items of QoS information regarding a TLV of a signal protocol required for
21 setup of a constraint routed label switched path (CR-LSP) based on the traffic
22 engineering function, said entries of said QoS profile being sequentially assigned indexes
23 corresponding to the respective items of QoS information.

1 2. (Currently Amended) The ~~data structure~~ method as set forth in claim 1,
2 wherein said indexes assigned to said profile entries include a plurality of indexes set by
3 an operator for interlinking corresponding ones of said entries of said subscriber profile,
4 said entries of said path profile, and said entries of said QoS profile.

1 3. (Currently Amended) The ~~data structure~~ method as set forth in claim 1,
2 wherein each of said entries of said subscriber profile includes:

3 a field for storing information about a type of a network service desired by a
4 subscriber;

5 an FEC table field having a plurality of entries, said entries of said FEC table field
6 containing a plurality of FEC information items corresponding to network service type
7 and being sequentially assigned indexes corresponding respectively to the plurality of
8 FEC information items;

9 a field for use, when an Internet protocol packet to be sent by a longest prefix

10 matching method cannot be forwarded for an emulated leased line service, in storing an
11 identifier of a source address of the Internet protocol packet;

12 a field for use, when the Internet protocol packet to be sent by the longest prefix
13 matching method cannot be forwarded for the emulated leased line service, in storing an
14 identifier of a destination address of said Internet protocol packet; and

15 a path index table field for storing indexes of certain ones of said entries of said
16 path profile linked to a corresponding one of said entries of said subscriber profile.

1 4. (Currently Amended) The ~~data-structure~~ method as set forth in claim 3,
2 wherein each of said entries of said subscriber profile is linked to plural ones of said
3 entries of said path profile, each of the linked entries of said path profile having an index
4 assigned a priority and stored in said path index table field for setup of a bypass path.

1 5. (Currently Amended) The ~~data-structure~~ method as set forth in claim 3,
2 wherein each of said entries of said FEC table field includes:

3 a field for storing a source port number available in a higher-order application
4 program for a real-time service;

5 a field for storing a destination port number available in the higher-order
6 application program for the real-time service;

7 an address table field having a plurality of entries, said entries of said address
8 table field storing a plurality of address information items and being sequentially

9 assigned indexes corresponding to respective ones of the address information items; and
10 a field for storing information about a number of said entries of said address table
11 field.

1 6. (Currently Amended) The ~~data-structure~~ method as set forth in claim 5,
2 wherein each of said entries of said address table field includes:

3 a field for storing said source address of said Internet protocol packet to be sent;
4 a field for storing information about a prefix length of said source address;
5 a destination address table field having a plurality of entries, said entries of said
6 destination address table field containing a plurality of respective destination address
7 information items of said Internet protocol packet to be sent, and being sequentially
8 assigned indexes corresponding to the respective destination address information items;
9 and
10 a field for storing information about a number of said entries in said destination
11 address table field.

1 7. (Currently Amended) The ~~data-structure~~ method as set forth in claim 6,
2 wherein each of said entries of said destination address table field includes:

3 a field for storing said destination address of said Internet protocol packet to be
4 sent; and
5 a field for storing information about a prefix length of said destination address.

1 8. (Currently Amended) The ~~data structure~~ method as set forth in claim 1,
2 wherein each of said entries of said path profile includes:

3 a field for storing an identifier of a label switched path set-up according to the
4 traffic engineering function;

5 an explicit routed-hop table field having a plurality of entries, said entries of said
6 explicit routed-hop table field storing a plurality of explicit routed-hop type length value
7 (ER-Hop TLV) determination information items and being sequentially assigned indexes
8 corresponding to respective ones of the ER-Hop TLV determination information items;

9 a field for storing information determining a preemption TLV of a signal protocol;

10 a field for storing information about a bypass path priority of a corresponding one
11 of said entries of said path profile linked to a certain one of said entries of said subscriber
12 profile; and

13 a field for storing an index of a given one of said entries of said QoS profile linked
14 to a corresponding entry of the path profile.

1 9. (Currently Amended) The ~~data structure~~ method as set forth in claim 1,
2 wherein each of said entries of said QoS profile entries includes:

3 a field for storing information about a QoS category;

4 a field for storing information determining a frequency of a traffic TLV of a signal
5 protocol;

6 a field for storing information determining a peak data rate of said traffic TLV;
7 a field for storing information determining a peak bucket size of said traffic TLV;
8 a field for storing information determining a committed data rate of said traffic
9 TLV; and
10 a field for storing information determining a committed bucket size of said traffic
11 TLV.

1 10. (Currently Amended) A ~~computer-readable storage medium for storing a~~
2 ~~data structure for implementation of a traffic engineering function~~ Lable Edge Router
3 (LER) in a multiprotocol label switching system implementing a traffic engineering
4 function, said ~~data structure~~ label edge router (LER) comprising:

5 a database for storing a subscriber profile including a plurality of entries for
6 storing forwarding equivalence class (FEC) information required for setup of a label
7 switched path (LSP) based on the traffic engineering function, said ~~entries of said~~
8 subscriber ~~profile~~ profiles being sequentially assigned indexes corresponding to a given
9 traffic engineering service subscriber identification (ID);

10 a path profile including a plurality of entries for storing respective items of path
11 information regarding a type length value (TLV) of a signal protocol required for setup of
12 an explicit routed label switched path (ER-LSP) based on the traffic engineering function,
13 said entries of said path profile being sequentially assigned indexes corresponding to the
14 respective items of the path information; and

15 a quality of service (QoS) profile including a plurality of entries for storing
16 respective items of QoS information regarding a TLV of a signal protocol required for
17 setup of a constraint routed label switched path (CR-LSP) based on the traffic
18 engineering function, said entries of said QoS profile being sequentially assigned indexes
19 corresponding to the respective items of QoS information; and

20 a traffic engineering operating and controlling function block (TEOCFB) which,
21 upon receipt of the LSP setup request including entry indexes of respective profiles,
22 interlinks the entry of each profile in accordance with the received entry index and sets up
23 the LSP referring to information of the linked profile.

1 11. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 10, wherein said indexes assigned to said profile entries include a
3 plurality of indexes set by an operator for interlinking corresponding ones of said entries
4 of said subscriber profile, said entries of said path profile, and said entries of said QoS
5 profile.

1 12. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 10, wherein each of said entries of said subscriber profile includes:

3 a field for storing information about a type of a network service desired by a
4 subscriber;

5 an FEC table field having a plurality of entries, said entries of said FEC table field

6 containing a plurality of FEC information items corresponding to network service type
7 and being sequentially assigned indexes corresponding respectively to the plurality of
8 FEC information items;

9 a field for use, when an Internet protocol packet to be sent by a longest prefix
10 matching method cannot be forwarded for an emulated leased line service, in storing an
11 identifier of a source address of the Internet protocol packet;

12 a field for use, when the Internet protocol packet to be sent by the longest prefix
13 matching method cannot be forwarded for the emulated leased line service, in storing an
14 identifier of a destination address of said Internet protocol packet; and

15 a path index table field for storing indexes of certain ones of said entries of said
16 path profile linked to a corresponding one of said entries of said subscriber profile.

1 13. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 12, wherein each of said entries of said subscriber profile is linked to
3 plural ones of said entries of said path profile, each of the linked entries of said path
4 profile having an index assigned a priority and stored in said path index table field for
5 setup of a bypass path.

1 14. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 12, wherein each of said entries of said FEC table field includes:

3 a field for storing a source port number available in a higher-order application

4 program for a real-time service;

5 a field for storing a destination port number available in the higher-order
6 application program for the real-time service;

7 an address table field having a plurality of entries, said entries of said address
8 table field storing a plurality of address information items and being sequentially
9 assigned indexes corresponding to respective ones of the address information items; and

10 a field for storing information about a number of said entries of said address table
11 field.

1 15. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 14, wherein each of said entries of said address table field includes:

3 a field for storing said source address of said Internet protocol packet to be sent;

4 a field for storing information about a prefix length of said source address;

5 a destination address table field having a plurality of entries, said entries of said
6 destination address table field containing a plurality of respective destination address
7 information items of said Internet protocol packet to be sent, and being sequentially
8 assigned indexes corresponding to the respective destination address information items;
9 and

10 a field for storing information about a number of said entries in said destination
11 address table field.

1 16. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 15, wherein each of said entries of said destination address table field
3 includes:

4 a field for storing said destination address of said Internet protocol packet to be
5 sent; and

6 a field for storing information about a prefix length of said destination address.

1 17. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 10, wherein each of said entries of said path profile includes:

3 a field for storing an identifier of a label switched path set-up according to the
4 traffic engineering function;

5 an explicit routed-hop table field having a plurality of entries, said entries of said
6 explicit routed-hop table field storing a plurality of explicit routed-hop type length value
7 (ER-Hop TLV) determination information items and being sequentially assigned indexes
8 corresponding to respective ones of the ER-Hop TLV determination information items;

9 a field for storing information determining a preemption TLV of a signal protocol;

10 a field for storing information about a bypass path priority of a corresponding one
11 of said entries of said path profile linked to a certain one of said entries of said subscriber
12 profile; and

13 a field for storing an index of a given one of said entries of said QoS profile linked
14 to a corresponding entry of the path profile.

1 18. (Currently Amended) The ~~computer-readable storage medium~~ label edge
2 router of claim 10, wherein each of said entries of said QoS profile entries includes:

- 3 a field for storing information about a QoS category;
- 4 a field for storing information determining a frequency of a traffic TLV of a signal
- 5 protocol;
- 6 a field for storing information determining a peak data rate of said traffic TLV;
- 7 a field for storing information determining a peak bucket size of said traffic TLV;
- 8 a field for storing information determining a committed data rate of said traffic
- 9 TLV; and
- 10 a field for storing information determining a committed bucket size of said traffic
- 11 TLV.

1 19. (Currently Amended) A label switched path (LSP) setup method, comprising
2 the steps of:

- 3 (a) storing a plurality of profiles including entries associated with stored
4 information corresponding respectively to a plurality of FEC information, a plurality of
5 ER-LSP setup information, and a plurality of QoS information, wherein the plurality of
6 profiles correspond respectively to the plurality of FEC information, the plurality of
7 ER-LSP setup information, and the plurality of QoS information;
- 8 [[(a)]] (b) receiving an LSP setup request and profile entry indexes;

9 [[~~(b)~~]] (c) interlinking created profile entries in accordance with the received
10 profile and indexes;

11 [[~~(c)~~]] (d) checking a quality of service (QoS) index field to determine whether a
12 linked QoS profile entry is present; and

13 [[~~(d)~~]] (e) setting up the LSP based on the determination of step [[~~(c)~~]] (d).

1 20. (Currently Amended) The method of claim 19, further comprising the step,
2 between steps ~~(b) and (c)~~ (c) and (d), of commencing setup of the LSP through signal
3 protocol with reference to information as to linked profile entries.

1 21. (Currently Amended) The method of claim 19, wherein step [[~~(d)~~]] (e)
2 comprises the step of setting up a constraint routed label switched path (CR-LSP) when
3 the linked QoS profile entry is present.

1 22. (Currently Amended) The method of claim 19, wherein step [[~~(d)~~]] (e)
2 comprises the step of setting up an explicit routed label switched path (ER-LSP) when the
3 linked QoS profile entry is not present.

1 23. (Currently Amended) The method of claim 19, further comprising step
2 [[~~(e)~~]] (f) of registering an LSP identifier, assigned through a signal protocol, in a
3 corresponding path profile entry.

1 24. (Currently Amended) The method of claim 23, further comprising step
2 ~~[[f)]~~ (g) of storing the LSP identifier and forwarding equivalence class (FEC)
3 information in a forwarding table.

1 25. (Currently Amended) A label switched path (LSP) release method,
2 comprising the steps of:

3 (a) storing a plurality of profiles including entries associated with stored
4 information corresponding respectively to a plurality of FEC information, a plurality of
5 ER-LSP setup information, and a plurality of QoS information, wherein the plurality of
6 profiles correspond respectively to the plurality of FEC information, the plurality of
7 ER-LSP setup information, and the plurality of QoS information;

8 ~~[[a)]~~ (b) receiving a LSP release request and a corresponding LSP identifier;

9 ~~[[b)]~~ (c) searching for a path profile entry corresponding to the received LSP
10 identifier;

11 ~~[[c)]~~ (d) extracting LSP release data from a profile entry linked to the searched
12 path profile entry;

13 ~~[[d)]~~ (e) checking a quality of service (QoS) index field in order to determine
14 whether a linked QoS profile entry is present; and

15 ~~[[e)]~~ (f) releasing the LSP based on the determination of step ~~[[d)]~~ (e).

1 26. (Original) The method of claim 25, wherein a constraint routed label
2 switched path (CR-LSP) is released when the linked QoS profile entry is present.

1 27. (Currently Amended) The method of claim 25, wherein ~~[[a]]~~ an explicit
2 routed label switched path (ER-LSP) is released when the linked QoS profile entry is not
3 present.

1 28. (Currently Amended) The method of claim 25, further comprising step
2 ~~[[f)]~~ (g) of removing forwarding equivalence class (FEC) information of the released
3 LSP from a forwarding table.

1 29. (Currently Amended) The method of claim 28, further comprising step
2 ~~[[g)]~~ (h) of initializing the identifier of the released LSP in a corresponding path profile
3 entry.

1 30. (Currently Amended) The method of claim 25, further comprising step
2 ~~[[f)]~~ (g) of initializing the identifier of the released LSP in a corresponding path profile
3 entry.

1 31. (New) A label switched path (LSP) setup method, comprising the steps of:
2 (a) receiving an LSP setup request and profile entry indexes;

3 (b) interlinking created profile entries in accordance with the received profile and
4 indexes;

5 (c) checking a quality of service (QoS) index field to determine whether a linked
6 QoS profile entry is present; and

7 (d) setting up the LSP based on the determination of step (c);
8 wherein step (d) comprises the step of setting up an explicit routed label switched
9 path (ER-LSP) when the linked QoS profile entry is not present.

1 32. (New) A label switched path (LSP) release method, comprising the steps of:

2 (a) receiving a LSP release request and a corresponding LSP identifier;

3 (b) searching for a path profile entry corresponding to the received LSP identifier;

4 (c) extracting LSP release data from a profile entry linked to the searched path
5 profile entry;

6 (d) checking a quality of service (QoS) index field in order to determine whether a
7 linked QoS profile entry is present; and

8 (e) releasing the LSP based on the determination of step (d);

9 wherein an explicit routed label switched path (ER-LSP) is released when the
10 linked QoS profile entry is not present.

1 33. A label switched path (LSP) release method, comprising the steps of:

2 (a) receiving a LSP release request and a corresponding LSP identifier;

3 (b) searching for a path profile entry corresponding to the received LSP identifier;

4 (c) extracting LSP release data from a profile entry linked to the searched path
5 profile entry;

6 (d) checking a quality of service (QoS) index field in order to determine whether a
7 linked QoS profile entry is present;

8 (e) releasing the LSP based on the determination of step (d); and

9 (f) initializing the identifier of the released LSP in a corresponding path profile
10 entry.